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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Application Number: 09/910,662
Filing Date: July 20, 2001
Appellant(s): Aral, et al.

Christopher M. Tobin
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed July 18, 2007 appealing from the Office

action mailed August 22, 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial

proceedings which will directly affect or be directly affected by or have a bearing on the

Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection

contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of invention contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal:

- Srinivasan et al., (6,823,336) issued on November 23, 2004.

- Cannon et al., (5,673,382) issued on September 30, 1997.

- Durflinger et al., (5,713,014) issued on January 27, 1998.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

1.   Claims 1-6, 9-11, 18-21, 23, and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Srinivasan et al., United States Patent Number 6,823,336 (hereinafter Srinivasan).

2.   With respect to claims 1, 3, and 5, Srinivasan teaches a system for

mirroring write operations [i.e. a remote mirroring facility **30** which transmits the

write commands, col.5, lns.17-36] from a local storage system [i.e. primary host

processor **21**] onto a remote storage system [i.e. secondary host processor **24**],

the system comprising:

•   an asynchronous mirroring driver [i.e. the remote data mirroring facility **30** can

be operated in an asynchronous mode, col.13, lns.40-65] resident in the local

storage system for intercepting I/O transactions [i.e. a remote mirroring facility **30**

which transmits the write commands, col.5, lns.17-36] to a storage disk of the

local storage system [i.e. primary data storage system **20**] [fig.1], identifying a

series of write transactions issued to said storage disk [col.1, lns.18-43 and col.3,

ln.58 – col.4, ln.17], making an exact copy of the series of write transactions [i.e.

maintains a copy of the dataset], and storing said exact copy within a series of

files [i.e. dataset] that are created on a file-system of the local storage system

[i.e. the primary data storage system **20** stores a dataset **41** in primary storage,

col.5, ln.36 – col.6, ln.50]; and

•   a first asynchronous mirroring coordinator [i.e. a remote mirroring facility **124**]

resident on the local storage system [i.e. primary host processor **112**] for invoking

a file transfer system to transmit the series of files on local file-system of the local

storage system [i.e. primary storage **118**] to a file system of the remote storage

system [i.e. secondary storage **128**] via a non-proprietary network protocol [i.e. a

transmission link] to accommodate an exact reproduction at the remote storage

system of the series of write transactions as issued to said storage disk of the

local storage system [fig.8].

3.   With respect to claims 2, 4 and 6, Srinivasan further teaches the system

claim 1 further comprising:

• a second asynchronous mirroring coordinator [i.e. remote mirroring facility

134] resident on the remote storage system for detecting the series of files on the

file system of the remote storage system, opening the files and reading the

copies of the series of write transactions in these files [fig.8 and col.14, ln.46 –

col.15, ln.14]; and

• an asynchronous mirroring driver resident on the remote storage system for

receiving the copies of the series of write transactions from the second

asynchronous mirroring coordinator and issuing the transactions to a remote

device connected to the remote storage system which is configured to mirror the

local storage device on the local storage system [col.10, lns.30-57].

4.   With respect to claims 9-11, Srinivasan further teaches the asynchronous

mirroring driver intercepts all I/O transactions in the system [i.e. the remote data

mirroring facility can be operated in an asynchronous mode, col.13, lns.40-65].

5.   With respect to claims 18-20, Srinivasan further teaches the asynchronous

mirroring driver intercepts a transaction affecting the content or organization of a

disk [col.20, ln.41 - col.21, ln.38].

6.   With respect to claims 21, 23, and 25, Srinivasan further teaches the

series of write transactions is one of the plurality of series of I/O transactions that

are respectively retained in corresponding ones of the series of files [col.1,

lns.18-43 and col.3, ln.58 – col.4, ln.17], and individual ones of the series of files

include pointers to accommodate sequencing the series of files [i.e. sequence

number, col.13, lns.40-65], whereby a transaction level record of changes to the

storage disk of the local storage system is provided for the remote storage

system [fig.10].

7.   With respect to claims 22, 24, and 26, Srinivasan further teaches the

plurality of series of I/O transactions include at least one formatting transactions

[i.e. each transaction includes a set of read-write instructions] and/or at least one

partitioning transaction [col.1, lns.18-43 and col.3, ln.58 – col.4, ln.17].

8.   Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Srinivasan as applied to claims 1, 3, and 5 above, in view of Cannon et al., U.S.

Patent No. 5,673,382 (hereinafter Cannon).

9.   With respect to claim 7, Srinivasan does not explicitly show a Header

portion that includes information on the total size of the file; an I/O Control Block

portion which indicates address offsets where each transaction in the file is to be

stored on the remotely located destination storage system, and which further

indicates the size of the data for each transaction; and a Data portion which

contains the data for each transaction in the file.

In a communication system, Cannon discloses individual ones of the

series of the files comprise:

- a Header portion that includes information on the total size of the file [col.8,

lns.44-46];

- an I/O Control Block portion which indicates address offsets where each

transaction in the file is to be stored on the remotely located destination storage

system, and which further indicates the size of the data for each transaction

[col.8, lns.43-44]; and

- a Data portion which contains the data for each transaction in the file [col.8,

lns.41-46].

Therefore, it would have been obvious to one of ordinary skill in the art at

the time of the invention was made to modify both Srinivasan in view of Cannon

by including a Header portion on the total size, indicating an I/O Control Block

portion, and containing a Data portion for each transaction in the file because this

feature keeps track of each transaction (i.e. the size of the file, the size of data

for each transaction and the data portion). It is for this reason that one of

ordinary skill in the art at the time of the invention would have been motivated to

modify in order to provide disaster recovery [Cannon, see abstract].

10.   Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Srinivasan in view of Cannon as applied to claim 7 above, and further in view of

Durflinger et al., U.S. Patent No. 5,713,014 (hereinafter Durflinger).

11.   With respect to claim 8, Srinivasan in view of Cannon does not explicitly

show a pointer to the I/O Control Block portion which indicates the offset where

the I/O Control Block portion of the file begins; and a pointer to the Data portion,

which indicates the offset where the Data portion of the file begins.

In a communication system, Durflinger discloses the Header portion

further includes: a pointer to the I/O Control Block portion which indicates the

offset where the I/O Control Block portion of the file begins; and a pointer to the

Data portion, which indicates the offset where the Data portion of the file begins

[col.11, lns.13-37].

Therefore, it would have been obvious to one of ordinary skill in the art at

the time of the invention was made to modify Srinivasan in view of Cannon, and

further in view of Durflinger by indicating the I/O Control Block and Data portion

of the file begins because this feature indicate where the I/O control block portion

begins in the file and where the data begins in the file. It is for this reason that

one of ordinary skill in the art at the time of the invention would have been

motivated to modify both Yanai and Cannon, and further in view of Durflinger in

order to access the files easier.

(10) Response to Argument

In the remarks, applicant argued in substance that

I.   **The Examiner erred in rejecting claims 1-6, 9-11, 18-21, 23, and 25**

under 35 U.S.C. 102(e) as being anticipated by Srinivasan.

In response to Appellant's argument that Srinivasan clearly fails to

disclose or suggest the I/O transactions to a storage disk are intercepted and an

exact copy of the write transactions is retained, the examiner respectfully

disagree. Srinivasan discloses the I/O transactions [= write commands] to a

storage disk are intercepted [= remote mirroring facility 30 which transmit the

write commands, fig.1 and col.5, ll.17-36]. Further, Srinivasan discloses an exact

copy of the write transaction [= write commands] is retained [col.6, ll.52 through

col.7, ll.12 and col.15, ll.15-59]. Srinivasan discloses the secondary file server

185 stores a copy of the file system that is stored in the primary file server 181 [=

the file system of the local storage system] [= retained exact copy is stored on

the file system of the local storage system, col.15, ll.57-59]. Srinivasan discloses

the remote mirroring facility 186 also ensures that the primary host processor will

receive acknowledgement of completion of all preceding write commands from

an application 199 from both the primary file server 181 and the secondary file

server 185 [= storing write commands from both primary file server 181 and the

secondary file server 185] [col.15, II.46-53]. Further, Srinivasan discloses the

write commands can write alternate sets of revisions to alternate dataset [=

dataset could be a set of files, col.5, II.60-62] revision storage [see fig.9 and

col.6, II.52 through col.7, II.12]. Therefore, Srinivasan discloses claimed feature

as show in the above.

In response to Appellant's argument that Srinivasan clearly fails to

disclose or suggest the retained exact copy of the write transactions is stored

within a series of files created on the file system of the local storage system, the

examiner respectfully disagree. Srinivasan discloses the retained exact copy of

the write transactions [=write commands] is stored within a series of files [=

dataset 41] created on the file system of the local storage system [= the file

system of the local storage system 181] [col.6, II.52 through col.7, II.12 and

col.15, II.15-59]. Srinivasan discloses the secondary file server 185 stores a

copy of the file system that is stored in the primary file server 181 [= the file

system of the local storage system] [= retained exact copy is stored on the file

system of the local storage system, col.15, II.57-59]. Srinivasan discloses the

remote mirroring facility 186 also ensures that the primary host processor will

receive acknowledgement of completion of all preceding write commands from

an application 199 from both the primary file server 181 and the secondary file

server 185 [= storing write commands from both primary file server 181 and the

secondary file server 185] [col.15, II.46-53]. Further, Srinivasan discloses the

write commands can write alternate sets of revisions to alternate dataset [=

dataset could be a set of files, col.5, ll.60-62] revision storage [see fig.9 and

col.6, ll.52 through col.7, ll.12]. Therefore, Srinivasan discloses claimed feature

as show in the above.

In response to Appellant's argument that Srinivasan clearly fails to

disclose or suggest the series of files is transmitted to the remote storage system

using a non-propriety network protocol to accommodate an exact reproduction of

the series of write transactions at the remote storage system, the examiner

respectfully disagree. Srinivasan discloses the series of files [= dataset] is

transmitted to the remote storage system using a non-propriety network protocol

[= transmission link 22 such as Ethernet, Fibre Channel, SCSI, NFS, CIFS, ATM]

to accommodate an exact reproduction of the series of write transactions at the

remote storage system [col.17, ll.29-53 and fig.1]. Therefore, Srinivasan

discloses claimed feature as show in the above.

In response to Appellant's argument that there is no detection of the series

of files on the file system of the remote system, or opening such files and reading

the exact copy of the series of write transaction, the examiner respectfully

disagrees. Srinivasan discloses detection of the series of files on the file system

of the remote system [= retained exact copy is stored on the file system of the

local storage system, col.15, ll.57-59] and reading the exact copy of the series of

write transaction [= retained exact copy is stored on the file system of the local

storage system, col.15, ll.57-59]. Therefore, Srinivasan discloses claimed

feature as show in the above.

In response to Appellant's argument that Srinivasan is also lacking in that
it fails to disclose or suggest making such transmission of the series of files
through an Internet connection, the examiner respectfully disagrees. Srinivasan
discloses transmission of the series of files [= dataset **41**] through an Internet
connection [= transmission link **22** such as Ethernet, Fibre Channel, SCSI, NFS,
CIFS, ATM] [col.17, ll.29-53 and fig.1]. Therefore, Srinivasan discloses claimed
feature as show in the above.

In response to Appellant's argument that there is no retained exact record
of write transactions to the storage disk of the local storage system, within a
series of file system files, or of having pointers to sequence those file system
files, the examiner respectfully disagrees. Srinivasan discloses retained exact
record of write transactions [= write commands] to the storage disk of the local
storage system [= the file system of the local storage system], within a series of
file system files [= dataset 41] [= retained exact copy is stored on the file system
of the local storage system, col.15, ll.57-59] or of having pointers to sequence
those file system files [col.15, ll.2-15 and col.16, ll.42-67]. Therefore, Srinivasan
discloses claimed feature as show in the above.

II.   **The Examiner erred in rejecting claim 7 under 35 U.S.C. 103(a) as
        being unpatentable over Srinivasan in view of Cannon.**

In response to Appellant's argument that Cannon does not disclose the

indication of address offsets for each transaction, information of the total size of

the file corresponding to each write transaction, and data for each transaction,

the examiner respectfully disagree. Cannon discloses the indication of address

offsets for each transaction [= an offsets 128 with the storage volume, col.8, ll.28-

46] and data for each transaction [= volume of each transaction A, B, C, D,

col.11, ll.8-36]. Further, the Appellant's argument does not commensurate with

the scope of the claim. Claim 7 directly or indirectly recites each transaction.

However, claim 7 does not recite the limitation of "information of total size of the

file corresponding to each write transaction" (emphasis added). In addition,

Cannon discloses information of the total size of the file corresponding to each

transaction [= store the size of the file, col.8, ll.28-46].

In response to Appellant's argument that a prima facie case of

obviousness has not been presented, the examiner respectfully disagree. The

examiner recognizes that obviousness can only be established by combining or

modifying the teaching of the prior art to produce the claimed invention where

there is some teaching, suggestion, or motivation to do so found either in the

references themselves or in the knowledge generally available to one of ordinary

skill in the art. See In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)

and In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it

would have been obvious to one of ordinary skill in the art at the time of the

invention was made to modify both Srinivasan in view of Cannon by including a

Header portion on the total size, indicating an I/O Control Block portion, and

containing a Data portion for each transaction in the file because this feature

keeps track of each transaction (i.e. the size of the file, the size of data for each

transaction and the data portion). It is for this reason that one of ordinary skill in

the art at the time of the invention would have been motivated to modify in order

to provide disaster recovery [Cannon, see abstract].

In response to Appellant's argument that there is no apparent reason to

conclude that Srinivasan and Cannon should be combined in the noted fashion,

the examiner respectfully disagree. The examiner recognizes that obviousness

can only be established by combining or modifying the teaching of the prior art to

produce the claimed invention where there is some teaching, suggestion, or

motivation to do so found either in the references themselves or in the knowledge

generally available to one of ordinary skill in the art. See In re Fine, 837 F.2d

1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and In re Jones, 958 F.2d 347, 21

USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to one

of ordinary skill in the art at the time of the invention was made to modify both

Srinivasan in view of Cannon by including a Header portion on the total size,

indicating an I/O Control Block portion, and containing a Data portion for each

transaction in the file because this feature keeps track of each transaction (i.e.

the size of the file, the size of data for each transaction and the data portion). It

is for this reason that one of ordinary skill in the art at the time of the invention

would have been motivated to modify in order to provide disaster recovery [Cannon, see abstract].

II.   **The Examiner erred in rejecting claim 8 under 35 U.S.C. 103(a) as being unpatentable over Srinivasan in view of Cannon as applied to claim 7, and further in view of Durflinger.**

In response to Appellant's argument that there is no disclosure of header that points to an I/O Control Block portion within the same file or a pointer that points to a Data portion within the same file, the examiner respectfully disagree. The Appellant's argument does not commensurate with the scope of the claim. Claim 8 directly or indirectly recites a pointer to the I/O Control Block portion and a pointer to the Data portion [col.11, II.13-37]. However, claim 8 does <u>not</u> recite the limitation of "header that points to an I/O Control Block portion <u>within the same file</u> or a pointer that points to a Data portion <u>within the same file</u>" (emphasis added).

In response to Appellant's argument that a prima facie case of obviousness has not been presented, the examiner respectfully disagree. The examiner recognizes that obviousness can only be established by combining or modifying the teaching of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)

and In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify both Srinivasan in view of Cannon by including a Header portion on the total size, indicating an I/O Control Block portion, and containing a Data portion for each transaction in the file because this feature keeps track of each transaction (i.e. the size of the file, the size of data for each transaction and the data portion). It is for this reason that one of ordinary skill in the art at the time of the invention would have been motivated to modify in order to provide disaster recovery [Cannon, see abstract]. Further, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Srinivasan in view of Cannon, and further in view of Durflinger by indicating the I/O Control Block and Data portion of the file begins because this feature indicate where the I/O control block portion begins in the file and where the data begins in the file. It is for this reason that one of ordinary skill in the art at the time of the invention would have been motivated to modify in order to access the files easier.

(11) Evidence Appendix

None

(12) Related Proceedings Appendix

None

For the above reasons, it is believed that the rejections should be sustained.
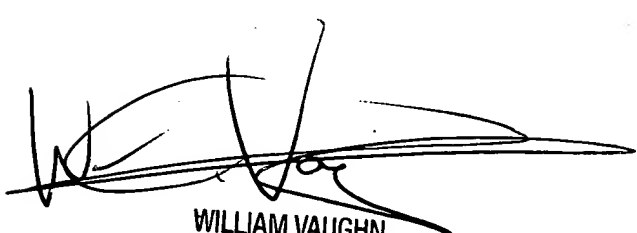
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January 14, 2008

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